

IN THE CLAIMS

The following is a complete listing of the claims pending in the present application:

1. (Currently amended) An average current estimation circuit comprising:
 - (a) a diode;
 - (b) a resistor in series with a switch, with the resistor coupled to ~~a termination~~ the cathode of the diode;
 - (c) an RC filter in parallel with the resistor and switch of element (b).
2. (Original) The average current estimation circuit of Claim 1 wherein the switch is synchronized with an incoming peak current signal.
3. (Original) The average current estimation circuit of Claim 1 wherein an average current signal is sensed across a capacitor in the RC filter.
4. (Original) The average current estimation circuit of Claim 1 wherein the RC filter smoothes an average current signal.
5. (Withdrawn) A switch mode power supply comprising:
 - (a) a peak current sensing circuit using a current sensing shunt; and
 - (b) an average current estimation circuit.
6. (Withdrawn) The switch mode power supply of Claim 5 wherein a peak current signal is sensed across the current sensing shunt.
7. (Withdrawn) The switch mode power supply of Claim 5 wherein the average current estimation circuit comprises:
 - (a) a diode;
 - (b) a resistor in series with a switch, with the resistor coupled to a termination of the diode;
 - (c) an RC filter in parallel with the resistor and switch of element (b).

8. (Withdrawn) The switch mode power supply of Claim 7 wherein the switch is synchronized with an incoming peak current signal.
9. (Withdrawn) The switch mode power supply of Claim 5 further comprises a power switch in series with the current sensing shunt.
10. (Withdrawn) The switch mode power supply of Claim 9 wherein the switch in the average current estimation circuit is synchronized with the power switch.
11. (Withdrawn) The average current estimation circuit of Claim 5 wherein an average current signal is sensed across a capacitor in the RC filter.
12. (Withdrawn) A switch mode power supply comprising :
 - (a) a peak current sensing circuit using a current sensing transformer; and
 - (b) an average current estimation circuit wherein (a) and (b) are in parallel.
13. (Withdrawn) The switch mode power supply of Claim 12 wherein the peak current sensing circuit further comprises a diode and a shunt resistor in series with a secondary winding of the current sensing transformer.
14. (Withdrawn) The switch mode power supply of Claim 13 wherein the peak current signal is sensed across the shunt resistor.
15. (Withdrawn) The switch mode power supply of Claim 12 wherein the average current estimation circuit comprises:
 - (a) a diode;
 - (b) a resistor in series with a switch, with the resistor coupled to a termination of the diode;
 - (c) an RC filter in parallel with the resistor and switch of element (b).
16. (Withdrawn) The switch mode power supply of Claim 15 wherein an average current

signal is sensed across a capacitor of the RC filter.

17. (Withdrawn) The switch mode power supply of Claim 12 wherein a switch in the average current estimation circuit is synchronized with an incoming current signal.

18. ((Withdrawn) A switch mode power supply comprising:

- (a) a peak current sensing circuit using a current sensing transformer;
- (b) an average current sensing circuit, wherein elements (a) and (b) cascade.

19. (Withdrawn) The switch mode power supply of Claim 18 wherein the peak current sensing circuit further comprises a diode and a shunt resistor in series with a secondary winding of the current sensing transformer.

20. (Withdrawn) The switch mode power supply of Claim 19 wherein the peak current signal is sensed across the shunt resistor.

21. (Withdrawn) The switch mode power supply of Claim 18 wherein the average current estimation circuit comprises:

- (a) a diode;
- (b) a resistor in series with a switch, with the resistor coupled to a termination of the diode;
- (c) an RC filter in parallel with the resistor and switch of element (b).

22. (Withdrawn) The switch mode power supply of Claim 18 wherein an average current signal is sensed across a capacitor of the RC filter.

23. (Withdrawn) The switch mode power supply of Claim 18 wherein a switch in the average current estimation circuit is synchronized with an incoming current signal.

24. (Withdrawn) A switch mode power supply comprising:

- (a) a peak current sensing circuit;

- (b) an average current estimation circuit;
 - (c) a current sensing transformer wherein both the peak current sensing circuit and the average current estimation circuit are coupled to the current sensing transformer.
25. (Withdrawn) The switch mode power supply of Claim 24 wherein the current sensing transformer has two secondary windings.
26. (Withdrawn) The switch mode power supply of Claim 24 wherein a peak current signal and an average current signal can be referenced to a first and a second ground.
27. (Withdrawn) The switch mode power supply of Claim 24 wherein the peak current sensing circuit further comprises a diode and a shunt resistor in series with a secondary winding of the current sensing transformer.
28. (Withdrawn) The switch mode power supply of Claim 27 wherein the peak current signal is sensed across the shunt resistor.
29. (Withdrawn) The switch mode power supply of Claim 24 wherein the average current estimation circuit comprises:
- (a) a diode;
 - (b) a resistor in series with a switch, with the resistor coupled to a termination of the diode;
 - (c) an RC filter in parallel with the resistor and switch of element (b).
30. (Withdrawn) The switch mode power supply of Claim 24 wherein an average current signal is sensed across a capacitor of the RC filter.
31. (Withdrawn) The switch mode power supply of Claim 24 wherein a switch in the average current estimation circuit is synchronized with an incoming current signal.

32. (Withdrawn) A switch mode power supply comprising
 - (a) a peak current sensing circuit;
 - (b) a average current estimation circuit; and
 - (c) an op-amp coupled to the output of the average current sensing circuit.
33. (Withdrawn) The switch mode power supply of Claim 32 wherein the op-amp is configured as a non-inverting amplifier and is coupled to a diode between the negative input of the op-amp and the output of the op-amp.
34. (Withdrawn) The switch mode power supply of Claim 32 wherein a resistor from a negative input of the op-amp and the ground.
35. (Withdrawn) The switch mode power supply of Claim 32 wherein the op-amp offsets a voltage drop from a diode in the average current estimation circuit.